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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/014,619

12/10/2001

Paul L. Frattini

58113/344996

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09/05/2008

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EXAMINER

PALABRICA, RICARDO J

ART UNIT

PAPER NUMBER

3663

MAIL DATE

DELIVERY MODE

09/05/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/014,619

Applicant(s)

FRATTINI ET AL.

Examiner

Rick Palabrica

Art Unit

3663

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7/21/08.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21, 24-26, 29-35 and 37-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21, 24-26, 29-35 and 37-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's 7/21/08 Amendment, which directly amended claims 21, 31, 34, and 37, submitted an additional drawing (i.e., Fig. 13), amended the specification to include a description pertaining to Fig. 13, and traversed the rejection of claims in the 3/19/08 Office action, is acknowledged.

Applicant's arguments with respect to the rejected claims have been considered but are moot in view of the new ground(s) of rejection.

Response to Arguments

2. Applicant alleges that "[d]uring further discussion of the prior art, the Examiner agreed that a single reference that teaches all of the elements as claim has not been cited." See Interview summary section, page 13, 1st full paragraph, Remarks in the Amendment.

This statement does not completely reflect the discussion during the interview. In response to said allegation, the examiner indicated that claims can be rejected not only on the basis of a single reference. The examiner specifically cited rejections based on a combination of references under 35 USC § 103.

3. Applicant further asserts that the claimed invention is patentable because, "the presently pending claims provide a solution to a long-felt but unmet, need in the nuclear

industry to be able to clean an irradiated fuel assembly having multiple rods without first having to take the time, effort and precautions necessary to disassemble the assembly."

The examiner disagrees.

First, as to the so-called long felt need, the examiner notes that evidence of nonobviousness based on secondary considerations (e.g., a long felt need in the market) is NOT sufficient to overcome a strong *prima facie* case of obviousness rejection. See MPEP 716.01(d). This obviousness is demonstrated in the following sections of this Office action.

Second, as to cleaning the assembled fuel assembly, the claims are directed to an apparatus and not to a process. As per MPEP 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

Third, cleaning an assembled fuel assembly by an ultrasonic device is old art (e.g., see Kato et al. [U.S. 5,467,791]).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 21, 24-26, 31, 32, 37, 38, 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fiorenzo et al. (EP 0418722 A1) in view of the combination of Walter (U.S. 5,200,666), Kato et al. (U.S. 5,467,791) and Atomic Energy Control

Board, "Fundamentals of Power Reactors" (hereinafter referred to as AECB). Fiorenzo et al. teach the applicant's claim limitations except for the specifics of the transducer and the configuration of the nuclear fuel assembly.

Fiorenzo et al. teach an apparatus for ultrasonic decontamination of radioactive metal material (see col. 1, lines 1+, and the figure). They show: a) an elongated housing 5A, 5B having an opening to receive a large sized contaminated surface; b) a plurality of ultrasonic transducers 13 that produce ultrasonic waves and positioned on said housing. Fiorenzo et al. further teach tank 5A having dimensions of 50 x 50 x 150 cm (150 cm height). See page 2, col. 2, lines 46+.

Kato et al. teach that it is old and advantageous to ultrasonically clean an assembled, spent nuclear fuel assembly having multiple rods, prior to moving said assembly into spent fuel installations or into nuclear fuel reprocessing plants. They also teach that such cleaning prevents dispersal of radioactive pollutants during handling and reduces radiation exposure of workers. See col. 1, lines 50+, and Figs.1-13.

Walter et al. teach in Fig. 1 a transducer comprising an elongated rod having a length that is an integral multiple of $\frac{1}{2}$ a predetermined wavelength (see column 1, lines 54+). They also teach that their invention can emit twice the amount of ultrasonic energy compared to other transducers with the same geometric dimensions (see column 2, lines 1+). Their transducer "eliminates to a large degree longitudinal emitted vibration and the resulting losses" (see col. 1, lines 44+). Their transducer comprises a first end, a second end and a rod disposed between the two ends.

Applicant himself admits that he uses the Walter et al. transducers that are

omnidirectional (see paragraph bridging pages 5 and 6 of the specification).

Additionally, applicant incorporates Walter et al.'s patent and their Fig. 1 is almost identical to applicant's Fig. 2.

AECB teaches fuel assemblies for a CANDU reactor, each assembly having a length of 0.5 m and diameter of 8 – 10 cm (see Figs. 3.3 and 3.4, pages 9 and 10). Clearly, an assembled CANDU spent fuel assembly can easily be accommodated into the elongated housing of Fiorenzo et al. (i.e., tank 5A, 5B) that has an opening at a first end and has a length of 150 cm.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Fiorenzo et al., to use the omnidirectional transducers taught by Walter et al., to gain the advantages thereof (i.e., more effective and efficient ultrasonic wave generation), because such modification is no more than the use of a well known expedient within the art. It would have been also obvious to said artisan to apply the modified apparatus for cleaning a spent CANDU fuel assembly, as taught by the combination of Kato et al. and AECB, to gain the advantages thereof (e.g., reduce worker radiation exposures) because this is no more than applying a well-known method of removing radioactive contamination from a well-known fuel assembly configuration.

Additionally, the claims would have been obvious because a person of ordinary skill has good reasons to pursue the known options within his or her technical grasp based on the teachings of the secondary references. If this leads to anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.

The claims are directed to an apparatus and NOT to a process. However, the claims are replete with statements that are either essentially method limitations or statements of intended or desired use. For example, "to clean an assembled irradiated nuclear fuel assembly," etc. These clauses, as well as other statements of intended use do not serve to patently distinguish the claimed structure over that of the reference, as long as the structure of the cited references is capable of performing the intended use. See MPEP 2111-2115.

See also MPEP 2114 that states:

A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647.

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531.

[A]pparatus claims cover what a device is, not what a device does." Hewlett-Packard Co. v. Bausch & Lomb Inc., 15 USPQ2d 1525,1528.

As set forth in MPEP 2115, a recitation in a claim to the material or article worked upon does not serve to limit an apparatus claim.

The system in the cited reference is capable of being used in the same manner and for the intended or desired use as the claimed invention. Note that it is sufficient to show that said capability exists, which is the case for the cited reference.

Also, the recitation that an element is "configured to" perform a function is not a positive limitation but only requires the ability to perform, i.e., it does not constitute a limitation in any patentable sense (see *In re Hutchison*, 69 USPQ 138). See, for example, claim 21. The apparatus in the cited reference is capable of performing the function recited in the claims, and therefore meets the claim limitations.

As to the use of a plurality of transducers positioned on the housing (e.g., see claims 21, 24-26, 31, 37, 38 and 41), this would have been obvious to said artisan to achieve the maximum degree of cleaning the assembly.

5. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fiorenzo et al., in view of the combination of Walter, Kato et al. and Takeda et al. (U.S. 5,812,621). Fiorenzo et al. teach the applicant's claim limitations except for the specifics of the transducer and the configuration of the nuclear fuel assembly.

The claim is rejected for the same reasons as those stated in section 4 above except for the application of the apparatus to the cleaning of the spent fuel assemblies of Takeda et al. instead of the CANDU fuel assemblies in AECB.

Takeda et al. teach an ABWR with short fuel assemblies, each assembly having a height of 55 cm (see col. 14, lines 58+). Thus, the elongated housing of Fiorenzo et al. (i.e., tank 5A, 5B) has an opening at a first end and a length of 150 cm that can easily accommodate an assembled short fuel assembly of Takeda et al.

6. Claims 30, 33 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fiorenzo et al. in combination with Kato et al. and AECB, as applied to claims 21, 24-26, 31, 37, 38, 39 and 41, and further in view of Richardson et al. (U.S. 5,377,237). The Fiorenzo et al.-Kato et al.-AECB combination discloses the applicant's claim limitations except for the reflector.

Kato et al. teach an ultrasonic cleaning device for a nuclear fuel assembly (see Abstract and Figs. 1-12). They further teach the use of a reflector 131 around housing

127 of the apparatus to prevent leakage of ultrasonic waves (see col. 10, lines 25+).

Richardson et al. teach a method and apparatus for ultrasonic inspection of a tube component of a nuclear reactor (see col. 1, lines 1+, and Fig. 2). They utilize an air gap as an efficient reflector of ultrasound (see col. 2, lines 64+). They further teach how to create this air gap by a mechanical seal 20 (see col. 2, lines 60+ and Fig. 2).

One having ordinary skill in the art at the time of the invention would have recognized that all references are in the same field of endeavor, i.e., application of ultrasonics. It would also have been obvious to such artisan to use with the system, as disclosed by Fiorenzo et al.-Kato et al.-AECB combination, to include an air gap around the inner reflector, by the teaching Richardson et al., to further gain the advantage thereof, e.g., further reduce wave leakage, because such modification is no more than the use of a well known expedient within the art.

As to the outer reflector, this is inherent in the resulting Fiorenzo-Kato et al.-AECB-Richardson et al. combination because said outer reflector must be present to have an air gap around the inner reflector. As to the geometry of the reflector system, this is obvious to an artisan.

7. Claims 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Fiorenzo et al., Kato et al., AECB and Richardson et al., and further in view of Scharon et al. (U.S. 4,320,528). The combination Fiorenzo et al., Kato et al., AECB and Richardson et al. disclose the applicant's claim limitations except for disposition of transducers on four sides of a fuel assembly and the reflector.

Fiorenzo teaches an assembly of transducers of such numbers as to maintain in the inner tank 5A a homogeneous power density of 25 W/l. It is inherent that at least four such assembly of transducers, evenly spaced from each other around the periphery of the tank, is required to produce such homogeneity.

Scharton et al. teaches an ultrasonic cleaning apparatus for a nuclear component that can be placed either inside the housing (see Fig. 4) or outside the housing (see Fig.6).

See section 5 for the teachings of Kato et al. and Richardson on the reflector with air gap.

One having ordinary skill in the art at the time of the invention would have recognized that all references are in the same field of endeavor, i.e., application of ultrasonics. It would also have been obvious to such artisan to place the transducers inside the housing, i.e., on tank 5A (and be adjacent to an irradiated fuel assembly being cleaned), by the teaching of Scharton et al., to gain the advantages thereof (e.g., more effective cleaning), because such modification is nothing more than the use of a well known expedient within the art.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Palabrica whose telephone number is 571-272-6880. The examiner can normally be reached on 6:00-4:30, Mon-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 29, 2008

/Rick Palabrica/
Primary Examiner, Art Unit 3663